

Application No. 09/588,462
Amendment filed April 29, 2004
Reply to Office Action dated January 29, 2004

Attorney Docket No. 027557-049
Page 2 of 7

Amendments to the Claims

The listing of claims below replaces all prior versions and listings of claims.

Listing of Claims

Claim 1 (currently amended): A loudspeaker volume range control arrangement for a telephone having a loudspeaker, and a microphone, and an echo cancellation system including an adaptive filter arrangement, the arrangement comprising:

means for controlling a the volume range of the loudspeaker in dependence on an the estimated distance between the loudspeaker and the microphone of the telephone, the distance being estimated based on the adaptive filter arrangement coefficients derived from signals of the loudspeaker and microphone of the telephone.

Claim 2 (canceled)

Claim 3 (currently amended): The loudspeaker volume range control arrangement as claimed in claim 1, 2, wherein the adaptive filter arrangement is an FIR filter.

Claim 4 (currently amended): The loudspeaker volume range control arrangement as claimed in claim 1, 2 wherein the largest absolute value of the adaptive filter coefficients is determined in order to estimate the distance between the microphone and the loudspeaker.

Claim 5 (currently amended): The loudspeaker volume range control arrangement as claimed in claim 1, 2 wherein the filter coefficients are summed or averaged in order to estimate the distance between the microphone and the loudspeaker.

Application No. 09/588,462
Amendment filed April 29, 2004
Reply to Office Action dated January 29, 2004

Attorney Docket No. 027557-049
Page 3 of 7

Claim 6 (original): The loudspeaker volume range control arrangement as claimed in claim 5 wherein a weighted average of filter coefficients are determined in order to estimate the distance between the microphone and the loudspeaker.

Claim 7 (original): The loudspeaker volume range control arrangement as claimed in claim 1, wherein the ratio or the difference between the energies of the loudspeaker signal and the microphone signal is used to estimate distance between the loudspeaker and the microphone.

Claim 8 (previously presented): A telephone having a loudspeaker and a microphone and a loudspeaker volume range control arrangement as claimed in claim 1.

Claim 9 (original): A motor vehicle fitted with a telephone as claimed in claim 8.

Claim 10 (currently amended): A method for controlling the loudspeaker volume range for a telephone having a loudspeaker, and a microphone, and an echo cancellation system including an adaptive filter arrangement, the method comprising: estimating a distance between the microphone and the loudspeaker based on adaptive filter arrangement coefficients derived from signals of the loudspeaker and microphone; and

controlling a the volume range of the loudspeaker in dependence on the estimated distance between the loudspeaker and the microphone of the telephone based on the signals of the loudspeaker and microphone of the telephone.

Claim 11 (canceled)

Claim 12 (currently amended): The method as claimed in claim 10 44, wherein the adaptive filter arrangement is a FIR filter.

Application No. 09/588,462
Amendment filed April 29, 2004
Reply to Office Action dated January 29, 2004

Attorney Docket No. 027557-049
Page 4 of 7

Claim 13 (currently amended): The method as claimed in claim 10 14, wherein the largest absolute value of the adaptive filter coefficients is determined in order to estimate the distance between the microphone and the loudspeaker.

Claim 14 (currently amended): The method as claimed in claim 10 14, wherein the filter coefficients are summed or averaged in order to estimate the distance between the microphone and the loudspeaker.

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Claim 15 (original): The method as claimed in claim 14, wherein a weighted average of filter coefficients are determined in order to estimate the distance between the microphone and the loudspeaker.

Claim 16 (original): The method as claimed in claim 10, wherein the ratio or the difference between the energies of the loudspeaker signal and the microphone signal is used to estimate distance between the loudspeaker and the microphone.